

# PATHWAYS

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## भाषा ज्ञान-खेल खेल में (II)

### I. समूह खेल

सामान—२४ कार्डों की गड्डी, चार-चीजों के नामों के ६ समूह।

समूह का नाम : चीजें

१. आसमान में होने वाले—चांद, सूरज, बादल, पतंग।
  २. पहनने के कपड़े—साड़ी, कुर्ती, कमीज, लहंगा।
  ३. सड़क—बस, ट्रैफिक लाईट, पैदल पार पथ, रिकशा।
  ४. खेल के मैदान में—पेड़, भूला, घास, गेंद।
  ५. रंग—गुलाबी, सलेटी, सिंदूरी, हरा।
  ६. वर्तन—कड़ाही, कटोरी, लोटा, देगची।
- एक ही गड्डी से कई खेल खेले जा सकते हैं।

A. प्रारम्भिक क्रिया—एक-एक करके कार्ड पूरी कक्षा को दिखाइए। हर कार्ड पर लिखे नाम को बच्चों से पढ़वाईए।

B. सारे कार्ड बांट दीजिए। अब आप कोई एक समूह का नाम बोलिए—उदाहरण—“वर्तन”। उस समूह के कार्ड जिन बच्चों के पास हैं, वे अपने-अपने कार्ड सबको दिखाकर उस पर लिखे शब्द का नाम पढ़ेंगे।

C. कार्ड बांट दीजिए, बच्चों को अपने आप ढुंढ़ के सही समूह बनाना है। आप पहले से बता दीजिए कौन से समूह वाले बच्चे कहां खड़े होंगे। इस क्रिया को कक्षा के बाहर करने में ज्यादा आसानी होगी।

D. “रमी” (Rummy)—यह तीन या चार बच्चों के साथ ही खेला जा सकता है। पूरी कक्षा के सामने पहले खेल को समझा दीजिए।

गड्डी को पीस लीजिए। हर खिलाड़ी को चार कार्ड बांटिए, बाकी कार्ड गड्डी में रहेंगे। हर खिलाड़ी को चार कार्डों का एक समूह बनाना है।

कुछ और समूह—

घर की चीजें—पलंग, मेज, अलमारी, चौकी  
पानी में रहने वाले—मछली, नाव, मेंढक, कछुआ  
फल—पपीता, केला, खरबूजा, अनार  
जानवर—लोमड़ी, घोड़ा, भेड़िया, हिरन  
पीने की चीजें—चाय, दूध, शरबत, पानी  
पढ़ने की चीजें—ग्रन्थालय, पत्रिका, चिट्ठी, किताब

### II. सुन के बताओ

बीस कार्डों की गड्डी, पांच समूह हैं, हर समूह में



चार चीजें हैं, एक समूह में एक ही अक्षर से शुरू होने वाले शब्द हैं।

इन कार्डों से भी समूह खेल खेलिए।

भ—भूला, भाड़ू, भगड़ा, भबला

स—सूई, साबुन, सफेद, सिक्का

प—पैर, पर्दा, परिवेश, पतलून

च—चाबी, चप्पल, चश्मा, चिम्टा

### III. पढ़िए और याद रखिए

A. चार्ट पर लिखे हुए शब्दों की एक सूची दिखाइए। बच्चों से मन में पढ़ने को कहिए। फिर उनसे पूछिए कि सूची में क्या क्या शब्द थे।

B. चार्ट पर शब्द की सूची दिखाइए। बच्चे उसे पढ़ें। फिर एक और चार्ट दिखाईए जिसमें अधूरी सूची हो। बच्चों को वह शब्द बताने हैं जो दूसरी सूची में नहीं हैं।

नोट—यह क्रिया लिखवा कर भी किया जा सकता है।

### IV. डॉमिनोज (Dominoes)

१. २४ कार्डों की गड्डी है, दो, तीन या चार बच्चे एक वक्त खेल सकते हैं।
२. हर कार्ड के दो हिस्से हैं, दोनों हिस्सों में एक-एक शब्द है। पर दोनों का कोई सम्बन्ध नहीं है।
३. गड्डी पीस कर हर खिलाड़ी को बराबर कार्ड बांट दीजिए। चाल बाएं से दाएं चलेगी। एक खिलाड़ी एक चाल में एक कार्ड रखेगा।
४. पहली चाल उस कार्ड से होगी जिसके बाएं हिस्से में तीर का निशान हो।
५. दूसरा खिलाड़ी अपना कार्ड पहले कार्ड के दाएं रखेगा। शर्त यह है कि दो पास-पास के शब्दों में कोई सम्बन्ध हो।
६. अगर किसी खिलाड़ी के पास उपयुक्त कार्ड नहीं है तो उसकी बारी खाली जायेगी।
७. खेल तब तक चलेगा जब तक सारे कार्ड खेले नहीं जाते।
८. जिस बच्चे के सारे कार्ड सबसे पहले खत्म हो जाते हैं उसे प्रथम स्थान मिलेगा।

→	पेड़	पत्ता	प्याला	पिच	तस्वीर
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क्रयान	बादल	मोर	सूरज	धूप का चश्मा	पानी
मछली	रेलगाड़ी	पटरी	कुर्ता	पजामा	नल
बाल्टी	दूध	भैंस	मेज	कुर्सी	दांत
दांतुन	फूल	तितली	पतंग	डोर	कलाई
चूड़ी	जूता	मोजा	किसान	हल	सिल
बट्टा	तराजू	बाट	●		

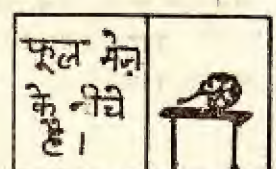
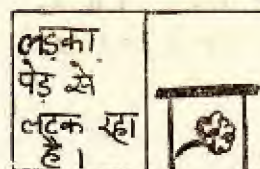
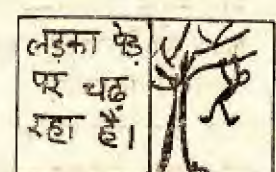
डामिनोज खेल कई विषयों से खेला जा सकता है।

\* विपरीतार्थक शब्द—

□	बड़ा	छोटा	मोटा	पतला	ऊपर
नीचे	अन्दर	बाहर	सूखा	गीला	□

बगैरह.....

- \* .....पुल्लिंग और स्त्रीलिंग शब्द
- \* .....जानवर और उनके बच्चे
- \* .....पशु-पक्षी और उनके घर
- \* .....संज्ञा विशेषण की जोड़ी
- \* .....चित्र और वाक्य





### V. कहानी बनाओ

एक ही अक्षर से शुरू होने वाले शब्दों से छोटी-सी कहानी बनाओ।  
गबरू एक गधा था। गबरू गोबर में गिर गया।  
वह गंदा हो गया। उसने गंगा में गोता लगाया।

### VI. देखो और लिखो

अध्यापिका बिना बोले क्रम से कुछ अभिनया (Actions) करती है। बच्चे ध्यान से देखते हैं। फिर वे उन क्रियाओं को अनुच्छेद में उसी क्रम से लिखेंगे जिस क्रम से अध्यापिका ने किया था।

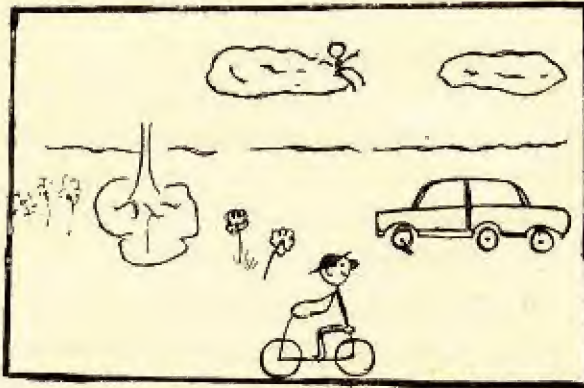
### VII. पुरानी कहानी को नई बनाओ

कोई भी जानी मानी कहानी लीजिए। उसे चार्ट या ब्लैकबोर्ड पर लिखिए। जो क्रिया, संज्ञा और विशेषण शब्द हैं, उनकी जगह खाली रखिए। खाली जगह नये शब्दों से भरना है, मूल कहानी के शब्दों से नहीं।

एक.....था। वह बहुत.....था। उसने एक.....देखा। वह.....के अन्दर भांका।  
.....बहुत.....था।.....ने एक-एक करके कुछ.....अन्दर डाल दिया।

### VIII. गलतियां लिखो

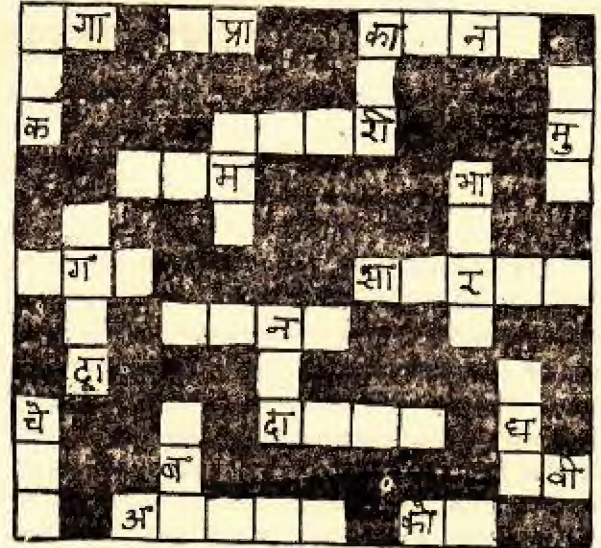
एक तस्वीर दिखाइए जिसमें कई उल्टी-सीधी हरकतें बनी हों। बच्चों को गलत हरकतों के बारे में वाक्य लिखने हैं।



### IX. वर्ग पहेली Crossword puzzle)

इस वर्ग पहेली में भारत की कई छोटी-बड़ी

नदियों के नाम छुपे हैं।



### X. सोचिए और करिए :

लगभग समान अर्थ के शब्दों पर निशान (✓) लगाइए।

- (१) बड़ा/विशाल/बूढ़ा/भीमकाय
- (२) ताप/गर्मी/ग्रीष्म/नीम
- (३) सहित/साथ/मिलना/सरल
- (४) शान्ति/धीरज/बुद्धि/खामोशी
- (५) शीतल/ठंडा/शत/बर्फाला
- (६) काई/धूल/गर्द/मिट्टी
- (७) लकीर/रेखा/लाईन/लेकिन
- (८) वांस/लठ/बदवू/बल्ली
- (९) कोहरा/धुंध/कुआसा/धूप
- (१०) नली/नाली/मोरी/पतनाला
- (११) जमीन/धरती/पृष्ठ/पृथ्वी
- (१२) फर्क/भूमि/अलग/भिन्न
- (१३) बदल/बादल/मेघ/घटा
- (१४) साफ़/स्वच्छ/कोरा/स्वाधीन
- (१५) तन/मुंह/शरीर/बदन
- (१६) गंदी/मलो/गोंद/दूषित
- (१७) खाल/त्वचा/चमड़ा/जूता
- (१८) भोला/बस्ता/थेला/बस्ती

XI. पहले कालम (Column) में कुछ शब्द हैं, इन शब्दों के अर्थ दूसरे कालम में लिखें।

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# MY INTERESTING FINDINGS

—A Project for Children's Development

by Mrs. Raji Subbarayan, Headmistress  
Bluebells School, New Delhi

As primary school teachers our task is to build a strong foundation for the children's learning as they progress through middle and senior school to college. One major problem I have observed is getting the children interested and actively participating in the learning process. Rather than the current role of teachers—namely disseminating knowledge and skills—it would be more useful if teachers served as guides while students are more involved in a self-learning process. Another important aspect, often forgotten, is that education does not begin and end at school. In fact, it begins from the time a child gets up, till he goes to sleep and continues through his dreams. Therefore helping children to learn during their non-school hours is an important facet of the learning process.

Keeping these in mind, we formulated objectives for a project which was tried out at our school this year. We attempted to:

(i) develop in children a inquiring mind by stimulating their natural curiosity and open mindedness.

(ii) use children's leisure time in developing their creative talents and in broadening their horizons.

(iii) develop in children at an early stage learning skills which would be useful in their future learning.

(iv) develop in children the ability to confidently interrelate with other children and adults and to improve their capacity to give logical reasons based on their comprehension of situations.

(v) develop a team spirit between the child, the teacher and the parents which would go a long way in the child's development.

## AN OUTLINE OF THE PROJECT

8-10 simple activities using materials easily found in homes are planned for each month. Most of them are explained and discussed in the classroom leaving the suspense and thrill of the final result to come from the children. A special note book is kept aside for recording the results. The activities are cyclostyled and each child staples a copy into his note book. The child tries out each activity at home and records his findings. During the last week of the month, the children submit their findings for correction.

Some examples of the activities we have used at the different levels are given below.

**Kindergarten :** At this stage all the activities are given as worksheets on which the child draws or colours with assistance from the parents. Sentences or words to be written are selected from a list given on the worksheet.

(i) It is time to go to sleep. Just a minute. See—what is the shape of your bed and draw it

(circle) (rectangle) (square).

(ii) Take out everything from your school bag, trace the shape of the following and colour them :

a. Your eraser

b. Tiffin box

c. The cap of your water bottle.

(iii) Take your father's handkerchief and fold it into two. Look at the shape. Fold into four. Now what is the shape? Draw the 2 shapes and write under each one.

(It is a rectangle).

(It is a square).



### CLASS I :

Have lots of fun while you play and learn :

(i) Take 2 handkerchiefs, soak them in water. Dry one inside your bathroom and the other out put in the sun. See which dries first.

(ii) Go out to the playground and make a few sand/mud balls. Make a castle or mountain. Do a little bit of gardening. Come back home and wash your hands with water only. Look at your hands. Are they clean ?

Now take soap and apply it to your hands. Rub your hands till the foam comes out. Look at the colour of the foam. Wash your hands with water. What was the colour of the foam ?

(white) (brown) (green).

(We must use soap to keep our hands clean.)

(We do not need soap to keep our hand clean).

### CLASS II

(i) Collect different kinds of leaves and press them under a carpet or a heavy book. Paste them in your note book and find out their names.

ii) Make your own glass of Boost/Bournvita/Complan etc. Write down how you did it. Find out why growing children must drink milk every day.

### CLASS III

(i) Walk from one side to the other of your

drawing room or bedroom and count the number of steps you took to measure the length and breadth of the room.

(ii) Ask mummy to buy you 250 grams of chocolate. Distribute or divide it into 5 parts. Find out how many chocolates are there in 50 grams.

### CLASS IV

(i) Rub some fried food on a brown paper. Then hold the paper up against light. Write about what you observed and why.

(ii) Take a potted plant. Put one end of a thread in its soil and the other end in a pot of water. Let this arrangement be for a week. Observe what happens everyday and at the end of the week.

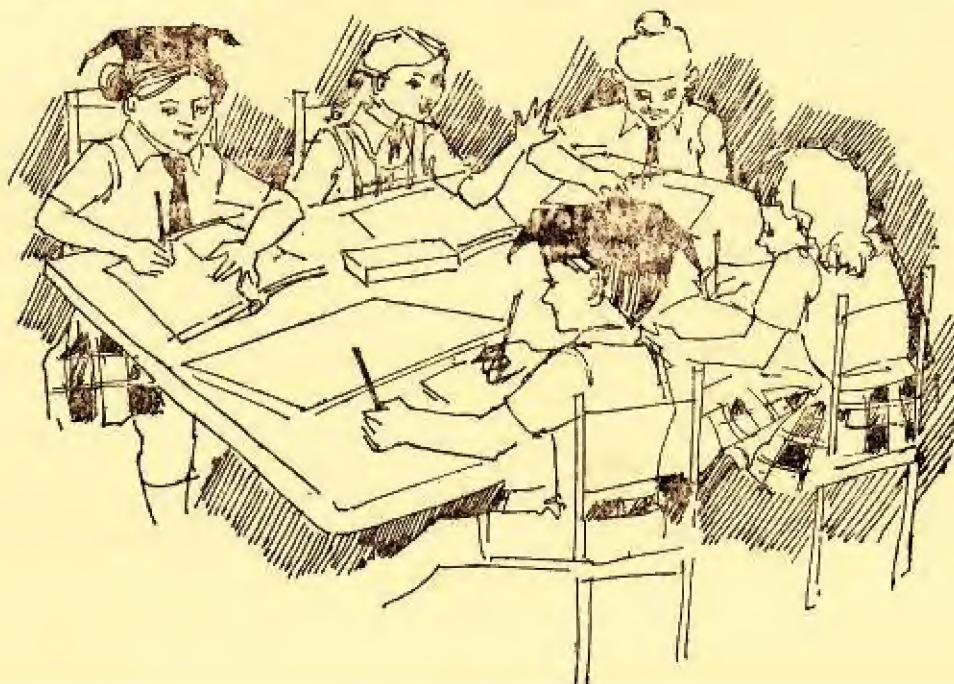
### CLASS V

(i) Find out why ice is slippery.

(ii) How does hot water help open a jam bottle ?

### The Awards System

Children who submit their work in time and who are competent in explaining their findings are awarded a Scientist's Cap which they wear for a week during class hours. The Children are generally very thrilled about looking so scholarly. They are also awarded points which are taken into account for the aggregate science marks.





## The Results

Interesting interactions have taken place between the pupils and their teacher or a parent and between the children. Some of these are reproduced verbatim here.

### Kindergarten (4 + years)

A. The children accompanied their teacher on a Nature Walk. Akshay Anand came running up to the teacher : Ma'am, I found a square.

Tr. : Wonderful ! You have found a square piece of plywood.

Later the plywood was labelled with Akshay's name and kept in the collection of "interesting findings."

B. During the lunch recess,

Siddharth : Ma'am mummy has given me sandwiches today. They are white triangles.

Nikhil : Ma'am, my mother has given me tomato sandwiches. The tomato is a circle and the sandwich is a square.

Nursery : During the Home Room period, when the teacher and children are engaged in informal conversation, an observant little one pointed to her *bindi* and said, "Ma'am you're wearing a circle."

It was interesting to note how the babies are alive with curiosity and are able to associate objects they see with geometric shapes.

### Class I

This was a conversation between Ridhima Sibbal and me. She came to my room with one of her paintings.

R : Ma'am this is for you.

Ms. S : Thank you Ridhima. Can you tell me something about your painting ?

R : Yes Ma'am. This is my house. This is a tree. These are two black birds and this is the Sun.

Ms. S : What part of the day is it ?

R : It is morning and the birds are flying.

Ms. S : What birds are these ?

R : These are not pet birds.

Ms. S : Pet birds. Oh ! I see-because they are not kept in a cage ? Good. But what is their name ? Just like your name is

Ridhima, what is the name of these birds.

R : I do not know.

Ms. S : Alright tell me what is the name of this tree ?

R : I do not know the name but it is very big.

S : What grows on this tree ?

R : Many leaves

S : Only leaves

R : Yes Ma'm, only leaves. There are no fruits on this tree.

S : Who looks after this tree ?

R : I do not know.

S : Ridhima you said this is your house and this tree is near your house. Who planted this tree and who looks after the tree ?

R : My father made a big hole first. Then there was a small tree lying over there. [Pointing to the place] We took it and put it in the hole. (Ms. S—Not put it, but "planted" it). Then I and my sister (Ms. S—Not I and my sister—My sister and I) put water every day and it became big and very big.

S : How many trees do you have.

R : Two.

S : But you have drawn only one.

R : One is behind the house

S : Good Ridhima. But you must find out the name of the black birds and tell me. Ask your teacher to take you for a walk and then you look out for these birds in the park.

R : Yes Ma'am.

(Ridhima left my room, looking not too happy. She entered again after a minute).

Ms. S : Yes Ridhima, did you find out ?

R : Yes Ma'am this is Rosy and this is Pinky.

S : Good ! These are pet names but you have to find out the real name of these birds. You go for your walk and come back and tell me.

Promptly after the recess. Ridhima came to my room.

R : Ma'am I've found out the name. These are crows.

S : Well done and here is a chocolate for you. Note that in the conversation the child was



able to explain what she observed in her own words and also note her keen observation in remarks like—"not a pet bird", "No fruits grow on this tree.", "made a big hole", "became big and big and very big."

## CLASS II

A. This conversation took place between a daughter and her mother at a fast food sale point.

Kamala : Mummy this patty is tasting funny ?

Mother : Funny ?

Kamala : I think it is spoilt.

Mother : Let me taste it

Kamala : No Mummy there will be bad bacteria and you will get a disease.

Mother : What is bacteria ?

Kamala : They are small germs and they are dangerous. But there are good ones also, like what one has in curds.

B. After the spell of sudden rain, a young daughter told her mother, "Mummy, do not keep your new leather shoes inside your cupboard. fungus will grow on them."

C. Another experiment given to the same class asked them to look out of the window and list all the things that can move. Among the children's answers were : people, dog, cats, pigs, cows, goats, squirrels, trees, leaves, grass, fruit, flowers, branches, shrubs, bicycles, bikes, cars, vans, scooter, aeroplane, bird, stars, moon, doors, windows, calender, paper, fan, wind, earth and insects.

The children were very sure about the earth moving and had also seen a falling star. During the discussion the teacher asked a simple question : "Do all these things move on their own ?"

"No, some move on their own and others are made to move," was the answer.

The class then grouped the objects into these categories, and the conversation continued.

Tr : What makes the fan move ?

St : When we put on the switch, the electricity makes it move.

Tr : How do you know the earth moves ?

St : Because we have day and night.

## CLASS III

A conversation between me, Tushima, Neha and Aarthi, of class III. The three of them came to my room to offer sweets on the occasion of Tushima's Birthday.

Ms S : Come in children.

T : Please take sweets Ma'am, its my birthday.

S : How many should I take ?

T : As many as you want.

Ms S : Shall I take a handful ?

T : Of course, Ma'am, please take.

Ms S : Guess how many sweets will be there in one handful ?

T : Twelve

Ms S : Let's see.

(I took a handful and kept it on the table) Now count them.

T : Twenty four

Ms S : Oh : How surprising you guessed 12 and I have taken out 24. What is the connection between the two numbers.

T : I do not know Ma'am.

Ms S : Alright divide these into two parts and count the number in each part.

T : 12

N : Ma'am I know. It is 2 times.

Ms S : 2 times What

N : Three are two groups of 12

Ms S : 2 times  $12 = ?$

N : 2 times  $12 = 24$

Ms S : 1 time  $12 = ?$

N : 1 time  $12 = 12$

2 times  $12 = 24$

Ms S : You have started learning 12 times tables. Now find out what is 3 times 12.

T,N,A : 36 [Worked out with the chocolates]

Ms S : Now Tushima you take a handful of sweets and let's count how many.

T : (Took a handful and counted) Twelve

Ms S : Imagine, you took out 12, I took out 24. What is the connection between your hand and mine ?

T : Ma'am your hand is 2 times mine.

Ms S : Good.

This is an interesting way of learning measurements, additions, multiplications and division.



#### CLASS IV

An extract from the discussion the 'Scientists of Class IV' had at the end of the term regarding the Project.

**Representatives :** Bhaskar Ray—Debayan Bhattacharya—Priya Kumar—Swati Godbole—Pradipta Banerjee

Priya—Why do you all say that this project is very interesting?

Debayan—I never complain to my mother that I am feeling bored. I am all the time searching for answers or doing things. I have started using the "Tell me Why" series a lot more now.

Bhaskar—I am also spending a lot of time with the General Knowledge books like Debayan.

Pradipta—My father is very happy that I have got a lot of opportunities now to read these books, which I have collected as presents from him.

Debayan—Why do you think this project gives knowledge?

Swati—When we work on these activities we are doing it all by ourselves and I feel very interested in them. I begin to think more and more and as we think more, we get new answers every time. I also find that my memory is better these days.

Priya Kumar—I agree with Swati but I also feel learning by ourselves is far more interesting because every time we ask someone a doubt they give you a very short answer like—"This happens" because of this this this," Nobody gives us all that happens; nobody tells us the minute details which we see and learn when we work on our own.

Debayan—Do you feel you have done something great?

Bhaskar—Yes, I feel very happy and satisfied. I am confident I will be a scientist one day.

Debayan—A scientist !! What do you want to invent?

Bhaskar—Well, an atlas for the galaxy.

Pradipta—An atlas for the galaxy ! With millions and millions and millions of stars. A brilliant idea. Bhaskar do you spend time watching the sky by night?

Bhaskar—Yes I do. I do wish I had a telescope I do look up at the sky and spot out some planets and common stars.

Debayan—You know I want to invent something which will not make me late to school. Something like I press a button and I am in school. I press another button and I am back home.

Swati—Debayan I am going to borrow your idea because I hate the long bus journey every-day to school.

Debayan—My mother also needs something—an automatic cooking and serving system. She is over worked.

Priya—I want to invent a transparent ship. I will go deep down into the ocean and learn about the life there.

Swati—But why a transparent ship?

Priya—If we go as divers, all the sea creatures go away and we cannot study them. But in a transparent ship they will think it is a whale and they will not go away.

Priya—Do you think by working on these activities, we are wasting time?

Bhaskar (Emphatically)—No. Time is not wasted it is utilised.

Pradipta—Do these activities increase your confidence?

Ali—Yes of course. That's why we are here.

Bhaskar—I think it will be a good idea if we could contribute the questions instead of the teachers giving them to us.

Pradipta—No, I do not like to give questions.

Others—Why, don't you like to share?

Pradipta—No, I don't know. But I think school should give the questions.

Priya—Bhaskar, there is no suspense if we give the questions. There is no thrill in doing it. When we are getting them from the



school, till the last minute we are looking forward to it.

Bhaskar—I agree. Do you think we should ask the school to permit us to make an invention and present it to the school.

Others—Brilliant idea.

We will tell our classmates and try and work on it.

Swati—When shall we meet again.

Others—End of December.

Readers would have noticed the interest of the children, their creative ideas and logical thinking.

## CLASS V

### Amar Pens

I would like to share with you how wonderful our young “scientist”, Vipul Amar, nine years old, felt when he was invited to a conference by a group of “scientists” of class V. He told them how he made a fountain pen.

Vipul : One day I was sitting at my study table. I was not in a mood to study. I was dreaming. Suddenly I saw a broken pen lying in the dust bin. I took it out and stared at it. I decided to make a new pen and make it work, I took out all my old pens. I selected an old nib and fitted it to the lower tube. I had to try more than ten of these. At last one fitted the tube well. Then I washed it and wiped it dry. I filled the tube with ink and tried writing with it many times—then also it did not write. I almost gave up. Suddenly I took a small cup, put some ink into it and left the pen for a couple of hours. I came back and tried writing with the pen. I jumped with joy when I saw the pen write. I brought it to school the next day and showed it to my classmates.

Aditi : Yes, it was a brilliant work. We were very excited. We told everybody about it, even class teacher. We all felt that Vipul should be the “scientist” of the month.

Hema : We must give his pen a name.

Prashant : Wonderful idea. What name ?

Rakesh : Something with his name.

Himanshu : “Vipul Pens”.

Others : No that does not sound good.

Satyapriya : “Amar Pens” because ‘amar’ means “forever”.

Prashant : We will call it “Amar Pens” as all of us approve of it.

Ashima : Are you planning anything else ?

Archita : Do not answer that question. It must be a suspense.

Prashant : Thank you friends. It has been an interesting session. We shall meet again in December.

### Parents’ Impressions of the Project.

Mrs Ritu Kohli and Mr Vinod Kohli :

- \* General awareness of children will increase considerably.
- \* Children will become more inquisitive and after getting satisfactory answers to their queries, will definitely become more self-confident.
- \* The subjects are so well choosen that children will find the project very interesting and thus their capability for taking the initiative will go up.....”

Mr. Sehubi : My daughter takes the project very seriously and I am glad she is Scientist for the month.

Mr Arun Maheshwari :

This new method introduced at Bluebells School has been found very useful as it arouses the creativity and inquisitiveness of the child. The teachings though very simple, get registered in the mind so easily as the child looks around and tries experiments with her hands with interest.

Eg : Seeds germinating, burning candle, setting of curds, etc.

Another notable feature is that it is introduced at a very young age and thus one learns these things with all doubts and questions answered. Otherwise, later in life a grown-up child may feel shy in clarifying the doubts about such simple observations.

An added advantage is the increase in voca-



bulary as a lot of new words come in and in the effort to explain his/her findings he/she puts them in formations which initially are not correct but this helps in the long run. The interest the children take in collecting relevant pictures or in drawing is unbelievable. We wish the project "all success."

Mrs Banga :

I find my children in classs II/III extremely enthusiastic about this new project. They take a keen interest in it. As we all know that children by nature are full of curiosity so these simple experiments are highly educative and motivating for them. As a parent I too take very keen interest and guide them and in the process I am learning many interesting things. I wish the project all success.

Among the aims of the project was to bring the team (the student, teacher and parent) closer. This project helped develop a direct relationship between the parents and the child and brought them closer as it involved an exchange of ideas and general conversation about both familiar and unfamiliar situations.

In the present day when both parents are working, the project gave them an opportunity to spend time usefully and creatively with their children.

Who is a Scientist ? A scientist is anybody who is methodical in his work procedure and tries to get the best results in the minimum time. A scientist is one who can confidently explain why he believes in his findings. A scientist is one who is always in search of excellence, in anything he or she does. We continue in our efforts to train our students as "scientists".

Anything new is generally received with some resentment and a lot more criticism, Surprisingly in introducing this project as part of the regular learning process the teachers and the parents have received it very well. We try to remain open and accept criticism in order to improve upon the methods and activities.

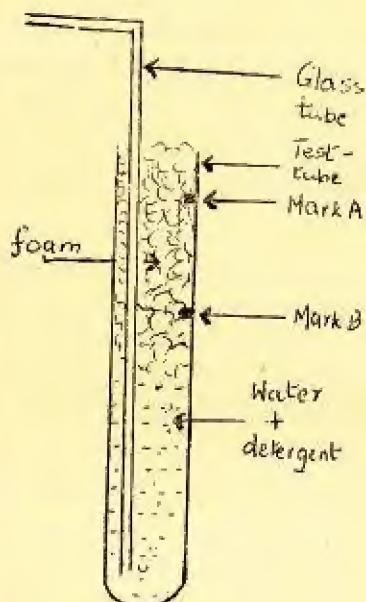
While we must be practical in our ambitions at this stage and not dream of 100% success, the student's commitment, the parents' cooperation and the creativity of the teachers have from the beginning encouraged and motivated us to proceed further in search of better results.

The results of this year's work will be seen and felt next year when the "Young Scientists" will be "one year old" and will by then slowly begin to grow more confident. In the interests of these budding "scientists" we welcome suggestions from readers who have tried similar experiments.

## Studying The Settling of Detergent Foams

A Science Project For Secondary Students

by Lalit Kishore, Principal,  
Kendriya Vidyalaya, Tenga Valley,  
Arunachal Pradesh



### Development and Assembly

Take a test tube and full it half way with water. Add 5 g of a given detergent powder to it. Stir the contents of the tube so as to dissolve the powder completely. Put two marks A and B on the test tube as shown.

Blow into the solution using a glass tube bent at right angles till the foam reaches the top of the test tube. Allow the foam to settle. Note down the time taken for the foam to reach from point A to B.

### Activities

Investigate the interaction between the following variables.

1. Rate of foam settling vs Amount of detergent
2. Rate of foam settling vs Different brands of commercial detergents.
3. Rate of foam settling vs. Amount of oil added to the solution.
4. Rate of foam settling vs. Temperature of the detergent solution.



# EVERY CHILD A WINNER

## An Alternative Scheme For the Recognition of Merit

Every school aims at the all-round development of its pupils and towards this goal attempts to lay adequate stress on physical education apart from academics. At least two or three periods of games and physical education per week form a compulsory part of the school routine. However, the large majority of the students remain disinterested in sports, games and athletics and do not voluntarily or happily participate in such events. When children are sent to the playing fields in "classes", pupils of unequal strength, height and weight are expected to play together, an arrangement which most often discourages the weaker ones. Competition against others has been the principle underlying the organisation of all such events, the winner being the one who defeats all others, no matter what his actual performance level is. Obviously such a system does not encourage mass participation or reward the efforts of those who try hard and yet do not achieve the 1st, 2nd or 3rd rank.

The situation in academics and other co-curricular activities is not very different. In many institutions, recognition of merit in the form of certificates or prizes is reserved for the "toppers" in the class. Consistent hard work and effort are not publicly acknowledged or praised.

In Sardar Patel Vidyalaya and St. Xavier's School, both in Delhi, an attempt has been made for the past several years to change this pattern of recognising and rewarding the work of students. As a result of the scheme, several students receive appreciation and this in turn, motivates them to improve further. In other words, they compete with themselves, rather than with others. A brief outline of the scheme follows.

### Sports

In Sardar Patel Vidyalaya pupils of comparable physical capacities (based on height, weight and age) are classified into five groups. Competitions are arranged only amongst pupils within the same group. By studying the records available, a minimum qualifying standard is fixed for each group of competitors for each selected item in games or athletics. For example, if the standard reached in the Delhi higher secondary schools meet for the 100 metres race, was 11.2 seconds, the minimum qualifying standard set for the group expected to run fastest in such a race might be 12 seconds. All the runners who finish the race within this time limit are honoured with a Merit Certificate. In a group which is expected to achieve less speed, the minimum qualifying standard would be correspondingly lowered. These standards are made known to the students, being printed in the school diary or publicised in other ways.

A student who is currently achieving a timing of 14 seconds is encouraged to try for 13.8 seconds in his next race. This slight increase in performance is an achievable goal and yet a challenge. The child is motivated to work hard, to discover faults in style and work towards eliminating them.

A further refinement of the scheme at St. Xavier's School specifies three different levels of achievement within each group of students. For example, a student below 14 years of age running in a 100 metres race will get a merit certificate and one point if he clocks between 14.5 and 15.2 seconds. If he clocks between 13.7 and 14.4 seconds he gets the certificate and three points. A result of 13.6 seconds or less earns five points. These points are added up for all students in determining House positions.



As a result of introducing this system in St. Xavier's School, students were found practicing for different events both in school (after class) as well as in their neighbourhoods. Participation went up as high as 76% of the total student body and 31% of all students received awards. In actual terms, within the first year itself, the number of students taking part rose from 680 to 1030. The number of certificates issued rose from 140 to 255 (1982) to 415 (1983/84).

On the Merit Certificate awarded to students the following details are stated : Name, Class, Age (or Group), Event, Performance, Qualifying Standard, School/State Record. These give the "winner" a clear picture of where he is at present and help fix the next target which is to be conquered.

Conducting a sports programme on such a scale is not an easy task, for it involves a great deal of book-keeping and planning. However, it is our firm conviction, that the increase in the number of students participating and the improvement in the quality of their performance, makes the additional effort well worth our while.

### **Scholastic and Other Co-Curricular Activities**

A similar scheme operates to recognise achievement in the classroom and in co-curricular work. The scheme serves to

i. recognise and reward merit/hard work in a student even if it is only in one subject. Poor performance in other subjects does not prevent the student from feeling a sense of achievement in at least one area;

ii. encourage children to strive harder and achieve better, as they try to accumulate more certificates in as many subjects as possible;

iii. bring out the fact that it is unrealistic to expect a single person to be "the best" in all spheres, while at the same time proving that more than one person can be outstanding in any one area;

iv. reinforce the idea that a democracy is a meritocracy where individuals are recognised on the basis of their competence in any area. Each area that one can excel in and show high-quality performance is important for society, for the nation ..be it academic, aesthetic, vocational etc.

A few points worth noting about setting standards in academic achievement. The qualifying percentage not only varies from class to class but also from subject to subject in the same class. The table below gives an idea of the standards set at 3 levels in Sardar Patel Vidyalaya.

Class	Hindi	English	Maths	Gen. Sc.	Soc Studies
IV	80%	80%	90%	80%	80%
VII	70%	70%	85%	75%	75%
IX	65%	65%	85%	75%	70%

The qualifying percentage for earning a merit certificate is periodically revised, particularly when classes show a definitely higher standard of performance. In most cases this percentage has been revised upwards after review by a committee of teachers.

The scheme does not deter the outstanding students from aiming still higher. They can aspire to win scholarships awarded in different subject areas to those who score the highest marks or to those who have the highest average in examinations held through the year. In St. Xavier's apart from the Merit Certificates awarded subjectwise, the students who score over 75% in aggregate (Top



academics) are also awarded special achievement certificates. Thus consistency in performance has to be maintained and the element of luck or chance whereby a student performs well in a single test are eliminated.

The following statistics are revealing. In Sardar Patel Vidyalaya, for the 1985-86 academic session, out of 825 pupils in classes V to XI, 488 earned Merit cards. In St. Xavier's School, for the same period, out of 1,374 pupils in classes VII to XI, 1406 earned Merit Certificates in subjects and 310 were awarded "Top Academic" certificates.

In Sardar Patel Vidyalaya, this scheme of recognition is extended further into the areas of co-curricular activities as well. A child is honoured by recognising his/her merit in subjects like Music, Dance, Sewing, Wood and Metal Craft, Theatre-Craft, Fine Arts, as well as innumerable SUPW subjects like Bakery, Ikebana, Batik, Cooking, Maintenance of Household Gadgets, Conservation and Ecology, Gardening, Photography, Clay Modelling, Macrame, First Aid, Food Preservation, Book-binding, Handicrafts and Interior Decoration.

Such a system of rewards motivates our students to constantly strive harder, stretching themselves to the outmost to achieve better and better performances in all areas and developing into "winners".

Bro. Ittoop, S. J.  
Principal  
St. Xavier's School, Delhi

Vibha Parthasarathi  
Principal  
Sardar Patel Vidyalaya, New Delhi

[The above paper was presented at the CBSE Principals conference held in Delhi in October 1986. We felt that readers, especially teachers, who could not be present would find it interesting reading]

— contd. from page 3

सही अर्थ पर निशान लगाईये।

१. निम्नलिखित .....छोटो लिखाई/नाचे लिखा/नोम से लिखा
२. पूर्णांक .....पूरे नम्बर/पुराने अंक/पूरा चाँद
३. सास नाक से हवा लेना/टिमाटर की चटनी/पति या पत्नी की माँ
४. क्रमशः कर्म का फल/एक के बाद एक/जल्दी
५. सम्पूर्ण देना/सारा/आधा
६. रिक्त रेत का बना/खाली/खून
७. समाप्त खत्म/देना/सम्पत्ति
८. आकृति लम्बाई/आकार/आक्रमण
९. स्पष्ट करना समझाना/घोना/मिटाना
१०. चयन चाँटा/एक फूल का नाम/चुनना
११. मौखिक बोल कर/मापना/मक्खी
१२. संक्षिप्त साधारण/सफ़ेद/छोटा
१३. न्यूनतम सबसे नया/सबसे कम/बीच का

XII. गोले के अन्दर एक मूल शब्द है। उसके साथ शब्दों की एक सूची है। सूची में जो शब्द मूल शब्द से सम्बन्धित है, उसके नीचे रेखा खींचिए।

- (१) (आग)  
शोले/चिगारी/आगे/जल/जलना/राख/गर्म/रेखा/भड़कना/सुलगना/आँगन/दहकना/बत्तख/ईंधन
- (२) (हवा)  
अंधेरी/भक्कड़/हलवा/अंधेरा/तूफ़ान/धूप/वन/पवन/उड़ना/डूबना/साँस/अदृश्य
- (३) (पानी)  
पीला/बरसना/बहना/बुनना/द्रव्य/बून्द/पोखर/पंखा/चश्मा/भील/भूल/छोटा/छोटा/भरना/निथारना/नथना/बावली/तरल
- (४) (धातु)  
परत/पर/पिघलना/ठोस/ठेला/पत्थर/रेल की पटरी पीटना/तार/लोहा/लहू/लोहार/विद्युत संवाहक/सरिया
- (५) (पत्थर)  
कंकड़/पहाड़/नदी/चट्टान/भारी/सूखा/रेत/मणि/मीन/जौहरी/नग/नागा/नक्काशी/खान/संगमरमर/शिला/सिलबट्टा

मलयश्री हाशमी  
सरदार पटेल विद्यालय, नई दिल्ली



## BOOKS CORNER

★ FUN WITH PHYSICS	Dilip M. Salwi	Rs. 12/-
★ INVENTIONS THAT SHAPED THE WORLD	Dilip M. Salwi	Rs. 12/-
★ COMPUTER I COMPUTER I	Utpal K. Banerjee	Rs. 25/-

Publisher : Madhuban Educational Books, 5 Ansari Road, New Delhi-110 002

Dilip M. Salwi is a well-known writer of popular science material for children. The first book mentioned above contains ten experiments—not very simple ones—which would keep a middle school student happily occupied for quite some time. Some of them which involve the use of tools and a flame should be tried out with an adult near at hand to help out in case of difficulties and guard against accidents. The science concepts involved are within the grasp of a class VIII student.

The second book tells the stories behind inventions that we commonly use today—dynamite, the cinema, the aeroplane, the wireless radio and the rocket. Written in fairly simple language and printed in clear, large type, they should interest young readers of middle school age.

Utpal Banerjee's book is a Science play for children. Scripted in six scenes, it is written in small verses rather than in prose. These lyrics (some of them could be improved) can be sung or recited by the soloist and the chorus. It involves 15 children who impersonate different users of computers and also act out the roles of computer devices. The play shows how the computer and its different devices can help fulfil the needs of different types of users. It offers opportunities for choreography and planned movement. The text is illustrated to help children/adults produce the play on the school stage. The costuming is rather simple and easily executed. Though the book itself is somewhat expensive, children should enjoy this "attempt to put scientific facts forward through verse, music and dance".

खेल खेल में

(विज्ञान के कुछ सस्ते, सरल और रोचक प्रयोग)

लेखक : अरविन्द गुप्ता

Though the written text is in Hindi, this delightful book contains clear line diagrams labelled in English which are largely self-explanatory. Its small size is an added attraction. Its pages are full of fascinating models made from inexpensive, easily available materials like matchsticks, cycle valve tubes, plastic buttons, paper clips, rubber, injection vials, bottle caps etc. A valuable addition to any science teacher's library, the book can be obtained from its publishers : The Department of Science & Technology, New Delhi-110 016, or from Eklavya, E 1/208 Arera Colony Bhopal-462 016.

चकमक is a delightful monthly children's magazine (बाल विज्ञान पत्रिका) also brought out by Eklavya. Priced at Rs. 2.50 per issue (Rs. 30/- annually), its pages are packed with experiments, information, stories and poems all written in simple Hindi and well illustrated. Those teachers of Hindi who would like to inculcate the reading habit in their middle-school and upper primary students would find this an interesting way of doing so.